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THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF BOLTON

COUNTY OF PEEL

VILLAGE OF BOLTON - 1967
COUNTY OF PEEL

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Report on a water pollution of
the village of Bolton, county of
Peel.

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Report

on a

Water Pollution Survey

of the

VILLAGE OF BOLTON

County of Peel

June 1967

District Engineers Branch

Division of Sanitary Engineering

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R E P O R T

THE ONTARIO WATER RESOURCES COMMISSION

I INTRODUCTION

The purpose of this survey was to locate and record significant sources of water pollution within the Village of Bolton. Surveys of this nature are conducted throughout the Province of Ontario by the Ontario Water Resources Commission and form a basis for evaluating any existing or potential sources of pollution. When sources of pollution are found corrective action is requested by the Commission.

II GENERAL

(1) Location

The Village of Bolton is located in the Township of Albion on Highway No. 50, approximately 12 miles north of the Metropolitan Toronto boundary. The population (1967 Municipal Directory) is 2,084.

(2) Drainage

Drainage is provided by the Humber River which traverses the village in a westerly direction.

III WATER SUPPLY

(1) Water Supply

Water for the village is obtained from two wells both located within the village limits. Well No. 3, located on Chapel Street, was brought into operation in 1960 by the OWRC in co-operation with

the village. At present Well No. 3 supplies the village and Well No. 2 located on Mill Street is used as a standby and also to fill tank trucks for rural residents.

The quality of the water is satisfactory for use as a domestic supply.

(2) Recreational

Recreational use of the Humber River is limited to swimming and fishing and is generally confined to the Bolton Conservation area located near the northwestern boundary of the village.

(3) Conservation

The Metropolitan Toronto and Region Conservation Authority has jurisdiction over the Humber River watershed.

IV WATER POLLUTION

(1) Sanitary Waste Disposal

Only a small portion of the village is not serviced by sanitary sewers. The non-sewered areas are indicated on the appended map.

The municipal water pollution control plant (WPCP) is presently being altered from a high-rate trickling filter plant to a 0.5-mgd conventional activated sludge plant. The poor quality of the final effluent and inefficient treatment necessitated the change.

If efficient operation and adequate supervision of the new facilities are provided, the revised facilities should be capable of providing acceptable treatment.

(2) Refuse Disposal

Refuse from the village is disposed of at a refuse disposal site located on property of the Metropolitan Toronto and Region Conservation Authority at Lot 18, Concession 4 in the Township of Albion. This site is operated by the township. Providing the present method of operation is continued no water pollution problems are imminent.

(3) Industrial Waste Disposal

Industry in the village is minimal. With the exception of Bolton Dairy the industrial premises are connected to the municipal sewerage system. No evidence of pollution problems from the dairy were noted during routine inspections by Commission field staff. Reportedly, industrial waste has not caused significant problems at the water pollution control plant.

(4) Sewer Collection System

The water pollution control plant records indicate that during storms, infiltration results in an increase approaching 50-75 per cent of the normal flow. The majority of the building weeping tiles drain to the sanitary sewers. Reportedly in any future development the weeping tiles will discharge to storm sewers.

Also it is suspected that separation of the sewer joints also contributes to the infiltration problem.

During heavy seasonal runoff and exceptionally heavy rain storms some sewage back-up occurs from the intersection of James and

King streets to the corner of James and Hemlock streets and on Louisa and Willow streets. This is apparently caused by an undersized main (8-inch) from Albert Street, south on James and south on Highway 50 to Wilton Drive. The problem is apparent since there are numerous 8-inch feeder mains flowing into a single 8-inch trunk.

In order to alleviate the problem of the back-up of sewage into basements, portable pumps are used to direct the sewage to storm sewers.

This intermittent discharge of sewage contaminants to the watercourse warrants remedial measures.

Reportedly, subdivision development in the southeast area of the village is anticipated. The trunk sewer to serve the proposed new development should be designed so that some of the flow from the problem areas can be redirected to the new conduit.

V DISCUSSION OF WATER QUALITY

Samples were collected from the Humber River and drainage and storm sewer conduits were investigated. Samples were collected from any significant discharge at the outfalls to the river. The sampling point locations are shown on the enclosed map and the results of the laboratory analyses are recorded in the appended tables.

The laboratory results confirm the satisfactory water quality of the Humber River upstream from Bolton. The quality of the water remains unchanged by the various drainage conduits located within the village. There was no evidence of any contaminating waste being

discharged to the storm sewers or drainage ditches. During dry weather, they showed no flow as indicated in the investigation in October.

Comparative samples were collected at similar locations and another investigation was done on May 19, 1967. This was after a period of intermittent light rain. The only appreciable flows noted in the drainage outfalls were at the James Street storm sewer (H-33.86W). The laboratory analyses of samples collected at these outfalls were consistent with normal storm-water discharge.

The results of the samples collected from the water pollution control plant effluent and the river samples downstream from the plant confirm the necessity of providing adequate and efficient treatment at the municipally operated sewage facility.

VI SUMMARY

A water pollution survey was undertaken in the Village of Bolton by the Ontario Water Resources Commission. Field investigations were made during the month of October 1966 and May 1967.

Infiltration problems and undersized trunk sewers that necessitate intermittent discharge of sewage to drainage conduits to alleviate back-up of sewage in premises, warrant remedial measures. The sizing and location of any new trunk sewers to enable the re-direction of part of the sewage flow from the problem area appears to be an appropriate solution.

The survey concludes that the only significant source of

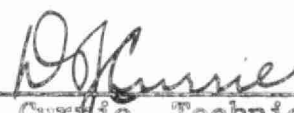
pollution within the Village of Bolton has been the municipally operated water pollution control facility. The provision of a revised method of treatment was progressing at the time of the May 1967 survey and the necessity of adopting procedures which will allow for the prompt provision of efficient treatment at the revised plant is reaffirmed.

VII RECOMMENDATIONS

1. The municipality should make a study of the sanitary sewer system to determine the source of infiltration.
2. Remedial measures to alleviate the sewage flow to undersized trunk sewers should be investigated by the village.
3. The alterations to the sewage treatment facility should be completed as soon as possible and adequate supervision which will enable efficient operation should be adhered to.

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Prepared by:


D.J. Currie, Technician-
Sanitary Engineering,
Div. of Sanitary Engineering.

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

A Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

B Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids and in some instances turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in ppm and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are (1) for stream water - a 5-day BOD of not greater than 4 ppm. (11) for storm sewer, sewage treatment plant and industrial waste discharges

- a 5-day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Turbidity Units".

ABBREVIATIONS

Estimated D.W.F.	- Estimated Dry Weather Flow
gpm	- Gallons per Minute
mgd	- Million Gallons per Day
M.F.	- Membrane Filter
ml	- Millilitre
ppm	- Parts per Million
OWRC	- Ontario Water Resources Commission
WPCP	- Water Pollution Control Plant
BOD	- Biochemical Oxygen Demand

VILLAGE OF BOLTON

STREAM SAMPLING POINTS

TABLE NO. 1

<u>Sampling Point No.</u>	<u>Location & Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Solids</u>			<u>M.F. Coliform Count per 100 ML</u>
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	
H-33.28	Humber R. downstream from WPCP.	Oct.10/66	2.0	312	12	300	90,000
		May 19/67	3.5	318	9	309	173,000
H-33.32	Humber R. upstream from WPCP.	Oct.10/66	1.0	314	8	306	1,080
		May 19/67	1.7	330	16	314	170
H-33.40	Humber R. at Kings Road.	Oct.10/66	1.2	308	11	297	1,440
		May 19/67	2.7	308	13	295	170
H-33.51	Humber R. at King St. Bridge.	Oct.10/66	2.0	290	7	283	940
		May 19/67	1.8	280	15	265	220
H-33.85	Humber R. near James St. storm sewer outfall.	Oct.10/66	2.2	316	7	309	1,000
		May 19/67	1.5	302	14	288	190
H-34.07	Humber R. downstream from Queen St. storm sewers.	Oct.10/66					144
		May 19/67					170
H-34.28	Humber R. downstream from Hickman St. Bridge.	Oct.10/66					72
		May 19/67					250
H-34.51	Humber R. at Glasgow Road.	Oct.10/66					84
		May 19/67					170

TABLE NO. 1 (CONTD)

<u>Sampling Point No.</u>	<u>Location & Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Solids</u>			<u>M.F. Coliform Count per 100 ML</u>
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	
				<u>(ppm)</u>	<u>(ppm)</u>	<u>(ppm)</u>	
H-34.91	Humber R.at Glasgow Road Bridge.	Oct.10/66					60
		May 19/67					310

VILLAGE OF BOLTON

OUTFALLS TO HUMBER RIVER

TABLE NO. 2

<u>Sampling Point No.</u>	<u>Location & Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F. Coliform Count per 100 ML</u>	<u>EST. DWF (GPM)</u>
H-33.30T	Bolton WPCP outfall.	Oct.10/66	42	654	30	624	10,800,000	
		May 19/67	85	756	84	672	11,900,000	
H-33.38W	Storm sewer - 10- inch concrete at Kings Road.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-33.66D	Open ditch near Albert St.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-33.72W	15-inch galvanized storm sewer oppo- site Willow St.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-33.86W	4-inch concrete storm sewer. 4-inch concrete at James St.	Oct.10/66	No Flow					
		May 19/67	2.2	620	7	613	1,000	3
H-33.88W	15-inch galvanized storm sewer upstream from James St.outfall.	Oct.10/66	No Flow					
		May 19/67	Flow Insufficient					
H-3408W1	36-inch concrete storm sewer at Queen St. north side.	Oct.10/66	No Flow					
		May 19/67	3.9	1932	12	1920	1,070	

TABLE NO. 2 (CONTD)

Sampling Point No.	Location & Description	Date	5-Day BOD (ppm)	Solids			M.F. Coliform Count per 100 ML	
				Total	Susp.	Diss.		
				(ppm)	(ppm)	(ppm)		
H-3408W2	36-inch concrete storm sewer.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-34.17D	Ditch opposite Ann St.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-34.22D	Ditch opposite Temperance St.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-34.27D	Ditch opposite Foundry St.	Oct.10/66	No Flow					
		May 19/67	No Flow					
H-34.28D	Ditch upstream from Foundry St.outfall.	Oct.10/66	No Flow					
		May 19/67	No Flow					